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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/462,435	06/19/2000	MICHAEL HAUSMANN	113.1004	5089
23280	7590	03/12/2004	EXAMINER	
DAVIDSON, DAVIDSON & KAPPEL, LLC 485 SEVENTH AVENUE, 14TH FLOOR NEW YORK, NY 10018			SISSON, BRADLEY L.	
			ART UNIT	PAPER NUMBER
			1634	

DATE MAILED: 03/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No. 09/462,435	Applicant(s) HAUSMANN ET AL.	
	Examiner Bradley L. Sisson	Art Unit 1634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 June 2003 and 25 August 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 12-27 is/are pending in the application.
- 4a) Of the above claim(s) 26 and 27 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 12-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Group I, claims 12-25, in response received 13 June 2003 is acknowledged.
2. Claims 26 and 27 have been withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the response received 13 June 2003.

Claim Objections

3. A series of singular dependent claims is permissible in which a dependent claim refers to a preceding claim which, in turn, refers to another preceding claim.
4. A claim, which depends from a dependent claim, should not be separated by any claim, which does not also depend from said dependent claim. In the present case, claims 20-25, which depend from claim 12, are separated from claim 12 by independent claim 16 and claims 17-18 that depend from said claim 16. It should be kept in mind that a dependent claim may refer to any preceding independent claim. In general, applicant's sequence will not be changed. See MPEP § 608.01(n).
5. Claim 18 is objected to because of the following informalities: In line four of the claim there appears "furthe." Perhaps applicant had intended to use further. Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claims 12-25 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Attention is directed to the decision of *Vas-Cath Inc. v. Mahurkar* 19 USPQ2d 1111 (CAFC, 1991):

This court in *Wilder* (and the CCPA before it) clearly recognized, and we hereby reaffirm, that 35 USC 112, first paragraph, requires a “written description of the invention” which is separate and distinct from the enablement requirement. The purpose of the “written description” requirement is broader than to merely explain how to “make and use”; the “applicant must also convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession *of the invention*. The invention is, for purposes of the “written description” inquiry, *whatever is now claimed*.

For convenience, claims 12 and 16, the only independent claims, are reproduced below.

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12. (New) A wave field microscope comprising:

an illumination or excitation system having an object space and including in two or more spatial directions a first light beam source comprising at least one real or virtual illumination source for light beams capable of coherence and a second light beam source comprising at least one reflector or beam splitter for decoupling beam components or a further illumination source for light beams capable of coherence,

each of the first and second light beam sources being assigned at least one objective lens, and each being suited for generating light wave trains, the light wave trains of the first light beam source being aligned antiparallel or in variably adjustable angles to the light wave trains of the second light beam source such that the light wave trains emitted by the first light beam source interfere with those of the second light beam source to form a standing wave field having plane wave fronts; and

a detection system including at least one detection objective lens suitable for at least one of epifluorescent detection and raster scanning point detection, the detection objective lens being arranged with an optical axis normal to the plane wave fronts, and the detection objective lens being one of the at least one objective lens or another objective lens, the detection system also including a flat detector arranged upstream from the detection objective lens suitable for epifluorescent detection or for raster scanning point detection.

16. (New) A wave field microscope comprising:

an illumination or excitation system having an object space and including in at least one of the three spatial directions a first illumination source including at least one real or virtual illumination source for light beams capable of coherence and at least one beam splitter for decoupling at least one beam component, and a common lens assigned to both the first illumination source and the at least one beam splitter into which light wave trains of the first illumination source and of the at least one beam splitter can be launched so as to produce on a rear focal plane facing away from the object space two spaced apart focal points, and that the light wave trains run relatively to each other in a variably adjustable angle in the space between the two focal planes, and interfere to form a one-dimensional, standing wave field; and

a detection system including at least one detection objective lens for at least one of epifluorescent detection and raster-scanning point detection, the at least one detection objective lens being one of the common lens and another lens, and further including a flat detector arranged upstream from the detection objective lens suited for epifluorescent detection or raster point detection.

A review of the disclosure finds the following examples:

- Example 1, "Design of a multi-dimensional wave field microscope type I having a rotationally supported object," pages 27-29;
- Example 2, "Distance measurement between gene segments of chromosomes in a cell nucleus using multi-dimensional wave field microscopy, the calibration method in accordance with the present invention, and, if indicated, axial tomography," pages 29-36;
- Example 3, "Examination and display of three-dimensionally spatially extended objects using multi-dimensional wave field microscope, the calibration method in accordance with the present invention and simultaneous image recording," pages 36-40;
- Example 4, "DNA sequencing using multi-dimensional wave field microscopy," pages 40-46;

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- Example 5, “Multi-dimensional type II wave field microscope having laterally, spatially modulated fluorescence excitation,” pages 46-49.

8. Of the noted examples, only Example 1 is directed to providing a description of the claimed invention, while the remaining four examples are directed towards the use or operation of a wave field microscope. A review of the disclosure fails to find any diagrams, figures or schematics.

9. Page 29, lines 5-8, of the disclosure state: “Ambiguities in intensity profiles, *i.e.*, primary and secondary intensity maxima of fluorescent ‘point’ targets, can be statistically analyzed with the assistance of suitable computer algorithms and, thus, enhance localization precision.” A review of the disclosure fails to find an adequate written description of such “suitable computer algorithms.” Assuming *arguendo*, that some version exists in the prior art, the specification does not provide an adequate written description of how prior art algorithms are to be adapted so to correctly resolve any ambiguities in any intensity profiles. Similarly, a review of the disclosure fails to locate any appendix for software or flow chart as to how automated embodiments of the invention are to perform and interact, including signal processing.

10. As presently worded, the claimed wave field microscope is capable of any level of resolution, the establishment of an infinite number of light wave trains, and a detection system capable of any level of detection, be it raster point detection, raster-scanning point detection, or epifluorescent detection. A review of the disclosure, however, fails to locate an adequate written description that reasonably supports any level of resolution, or the establishment of an infinite number of light wave trains, or a detection system capable of any level of detection. At best, the specification provides general suggestions and guidance as to how such may be brought together.

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Such general teachings as to how the claimed device might be produced does not rise to the level of an adequate written description of the claimed invention such that the specification reasonably suggests that applicant possessed the invention at the time of filing.

11. In accordance with claim 17, the detector is a camera. For purposes of examination, the “camera” has been interpreted as encompassing all forms of cameras. A review of the disclosure fails to locate an adequate written description of any and all manner of cameras, much less how any camera would be appropriately configured and utilized in combination with the claimed invention.

12. In accordance with claim 21, there is to be provided “at least one calibration target in the wave field.” Page 30 of the specification teaches that calibration targets are to be prepared under the same physical and chemical experimental conditions as the object structures to be localized. A review of the disclosure fails to locate an adequate written description of the chemical and physical experimental conditions under which the objects and calibration targets are to be prepared. Furthermore, the specification does not provide an adequate written description of the actual products so produced.

13. It appears that applicant is attempting to satisfy the written description requirement of 35 USC 112, first paragraph, through obviousness. Obviousness, however, cannot be relied upon for satisfaction of the written description requirement. In support of this position, attention is directed to the decision in *University of California v. Eli Lilly and Co.* (Fed. Cir. 1997) 43 USPQ2d at 1405, citing *Lockwood v. American Airlines Inc.* (Fed. Cir. 1997) 41 USPQ2d at 1966:

Recently, we held that a description which renders obvious a claimed invention is not sufficient to satisfy the written description requirement of that invention.

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14. For the above reasons, and in the absence of convincing evidence to the contrary, claims 12-25 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement.

15. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

16. Claims 12-25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

17. Claims 12 and 16 are indefinite with respect to what constitutes the metes and bounds of "virtual illumination source." It is further unclear how virtual illumination is split in a non-virtual sense, and is subsequently used to detect and/or measure the distances and sizes of non-virtual mater of any size. Dependent claims 13-15 and 17-25 are also rejected as they fail to overcome this issue.

18. The term "low" in claim 15, line 2, is a relative term, which renders the claim indefinite. The term "low" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

19. The term "high" in claim 15, line 3, is a relative term, which renders the claim indefinite. The term "high" is not defined by the claim, the specification does not provide a standard for

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ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

20. The term "maximal florescence intensity" in claim 23 is a relative term, which renders the claim indefinite. The term "maximal fluorescence intensity" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

21. Claim 24 lacks antecedent support for "the same place."

Claim Rejections - 35 USC § 102/103

22. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

23. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

24. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

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4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

25. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

26. Claims 12, 13, 16, and 17 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over US Patent 4,188,122 (Massie et al.).

27. Massie et al., disclose a device that comprises an illumination system whereby a light beam is split into first and second beams that are capable of coherence. Massie et al. meet the limitation of “each of the first and second light beam sources being assigned at least one objective lens”, where the first and second light beams are passed through a Bragg cell.

28. Massie et al., meet the limitation of a detection system where the disclosed invention has phase detection electronics.

29. The limitation of a “camera” of claim 13 is considered to encompass photoelectric detection means. Massie et al., column 6, penultimate paragraph, disclose a phase detector.

30. In the event that the invention of Massie et al., does not meet the limitations of claims 12 and 16, the claimed invention is considered to be obvious in view of the detailed teachings of the prior art made of record.

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Conclusion

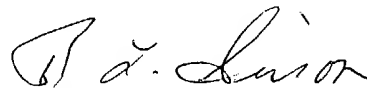
31. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US Patent 5,715,060 (Sides), and US Patent 4,813,782 (Yagi et al.).

32. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bradley L. Sisson whose telephone number is (571) 272-0751.

The examiner can normally be reached on 6:30 a.m. to 5 p.m., Monday through Thursday.

33. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Benzion can be reached on (571) 272-0782. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

34. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Bradley L. Sisson
Primary Examiner
Art Unit 1634

BLS
09 March 2004